

Gar'kovets, T. G.

Condensation of dimethylaniline with acetylene and acetaldehyde T. G. Gar'kovets and I. P. Tsukervanik (Central Asia State Univ., Tashkent). Zhur. Obshch. Khim. 26, 1856-18 (1958). C_2H_2 was introduced over 4 hrs. at 15 l./hr. into 63 ml. $PhNMe_2$ with simultaneous addn. of 33 g. $AlCl_3$ on a steam bath; after quenching the mixt. with H_2O , treatment with $NaOH$ and steam distn. there was formed 34.2% $(p-Me_2NC_6H_4)_2CHMe$ (I), b. $203-10^\circ$, m. 67° ; methiodide, m. $187-8^\circ$; picrate, m. $140-7^\circ$; di-HCl salt, m. $224-5^\circ$. I (4 g.) and 3 ml. MeI heated on a steam bath and treated 3 hrs. with 120 g. 3% Na-Hg yielded 25.8% Ph_2CHMe . To 13 g. paraldehyde and 63 ml. Me_2NPh on a steam bath was added over 1 hr. 33 g. $AlCl_3$ and after 2 hrs. heating, the mass was treated with aq. HCl and steam distd. to yield 43.9% I. Passage of C_2H_2 with simultaneous addn. of 33 g. $AlCl_3$ to 63 ml. Me_2NPh and 100 ml. $PhNO_2$ followed by heating 7 hrs. gave 32.1% $(p-Me_2NC_6H_4)_2CH_2$, b. $218-20^\circ$, m. 89° ; picrate, m. 177° ; methiodide, m. $173-4^\circ$. Treatment with Na-Hg gave Ph_2CHMe . The higher products of condensation yielded a little $CH(C_6H_4NMe_2)_2$, m. 173° . With $SnCl_4$ catalyst the yields of the 2 last products were 43.0% and 16%, resp., from C_2H_2 and Me_2NPh on a steam bath. G. M. R.

1. Academic Azatshykov G. A. R. University

GAR'KOVETS, T. G.

Condensation of dimethylamine with acetylene and
acetaldehyde. T. G. Gar'kovets and I. P. Tsukerman.
J. Gen. Chem. U.S.S.R. 41, 1637-60 (1956) (English trans-
lation).—See C.A. 51, 1907b.

4E3d
4E4i
4E4j
4E4k
4E4l
4E4m
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PM
art

ALIYEV, Ya.Yu.; GAR'KOVETS, T.G.; KOVINA, I.M.; ROMANOVA, I.B.;
MONAKOV, M.I.

Use of active carbon monoxide in the carbonylation reaction.
Uzb.khim.zhur. no.4:54-60 '59. (MIRA 13:1)

1. Institut khimii AN UzSSR.
(Carbon monoxide)

S/168/59/000/011/003/003
A110/A133

AUTHORS: Aliyev, Ya. Yu.; Romanova, I. B.; Gar'kovets, T. G.; Kovina, I. M., and Monakov, M. I.

TITLE: Extraction of nickel and cobalt carbonyls from aluminum alloys

PERIODICAL: Dokladi Akademii nauk UzSSR, no. 11, 1959, 36 - 39

TEXT: The authors cite various extraction methods of nickel and cobalt carbonyls [Ref. 2: Blanchard, A. A., U. Kh., 7, 1464 (1938); 10, 815 (1941) - Ref. 4: Hieber, W., Schulten, H., Marin, R., Z.-anorg. Chemie, 240, 26 (1939) - Ref. 5: Frey, Hg., Ber., 28, 2512 (1895) - Ref. 6: Hieber, W., Behrens, H., Teller, H., Z. anorg. Chemie, 249, 26 (1942) - Ref. 7: Vanino, L., Handbuch präpar. Chem., 1, 652 (1925) - Ref. 8: Windsor, M. M., Blanchard, A. A., J. Am. Chem. Soc., 55, 1877 (1933) - Ref. 9: Reppe, W., Ann., 582, 116 (1953)] and describe an extraction method from aluminum alloys, by lixivation of aluminum with caustic alkaline solutions. Test results obtained with a Ni-Al alloy (45:55) using 25% NaOH (8) or KOH (9) solution for activation, shown in Table 1, contain data on: 1) number of tests performed, 2) alloy quantity in grams, 3) temperature, °C, 4) CO pressure in atm, 5)

Card 1/5 3

Extraction of nickel and cobalt carbonyls...

S/168/59/000/011/003/003
A110/A133

duration of the test in hrs, 6) obtained quantity of carbonyls according to the Ni content in the alloy, given in grams (a) and percents (b), and 7) CO₂ content in waste gases. The tests were carried out in autoclaves at 100°- 200° and a pressure of 150 - 200 atm. In Table 2 test results obtained with Co-Al alloy (45:55) using a 25% KOH solution for activation are shown (legend 1) to 7) as in Table 1). In both cases an intensive reaction of CO took place according to the system $2CO \rightarrow C + CO_2$; showing considerable quantities of CO₂ in the waste gases and carbon black in the catalyzate (Tests 1 and 2 in Table 1 and Test 3 in Table 2). The tests were carried out on Ni-Al and Co-Al alloys cast in crucibles. The carbon monoxide obtained by the reaction of sulphuric acid on the formic acid was collected in a gas container, and its purity tested by a PTH (VTI) eudiometer on samples taken from the gas container and the buffer. The composition of the gas compressed at 350 atm in a special buffer and piped from the gas container to the autoclave was: CO - 95%, CO₂ - 0.3%, O₂ - 0.7%, H₂ - 0%, C_nH_m - 0.3% and gas residues (N₂) - 2.7%. The extraction process is described in detail. There are 2 tables and 9 references: 2 Soviet-bloc and 7 non-Soviet-bloc. The references to English-language publications read as follows: Blanchard,

Card 2/5 3

Extraction of nickel and cobalt carbonyls...

S/468/59/000/011/003/003
A110/A133

A. A., U. Kh., 7, 1964 (1938); Windsor, M. M., Blanchard, A. A., J. Am. Chem. Soc., 55, 1877 (1933); Reppe, W., Ann., 582, 116 (1953).

ASSOCIATION: Institut Khimii AN UzSSR (Institute of Chemistry of the Academy of Sciences UzSSR)

PRESENTED: by Yu. Yunusov, Academician of the AS UzSSR

SUBMITTED: April 24, 1959

Card 3/53

ALIYEV, Ya.Yu.; GAR'KOVETS, T.G.; PENSKEYA, L.V.

Preparation of copper acetylenide. Uzb.khim.zhur. 6 no.1:69-72
'62. (MIRA 15:3)

1. Institut khimii AN UzSSR.
(Copper compounds) (Acetylene)

GARKOVETS, V.S.

PROCESSES AND PROPERTIES

The genesis of the Abail iron ore deposit. V. S. Garkovets. *Comp. rend. acad. sci. USSR* 54, 31, 5 (1968) (in English). - The deposit, located in the Arys River Valley of South Kazakhstan Province, occurs in fractured Silurian limestones and shales. It consists of three ore types: primary sideritic ores (contg. arsenopyrite, secondary (oxidized) Fe ores such as hydrogossite and turgite, and mixed oxide-carbonate ores forming a transition zone between the other two. This deposit is unquestionably of hydrothermal origin, as evidenced by geol. features, the metasomatic nature of the mineralization, and the close assocn. of the sideritic and typically hydrothermal quartz phases. The genetic history is as follows. The Fe-Mg-rich solns. discharged from the parent magma in metasomatic reaction with crinoid limestones in the fracture zone developed granular dolomitized rocks. The sideritic mineralization followed a reprecipitation of the fracture. Quartz-ankerite veins formed next in both the ore body and the fractured rock surrounding. The latest hydrothermal phase was barite and probably tetrahydrate mineralization. Arsenopyrite must have segregated between the siderite and quartz-ankerite stages. Brown ironstone present originated by supergene alteration of the siderite, mainly by pseudo-morphic replacement. Ester W. Chaffy

ASB-SEA METALLURGICAL LITERATURE CLASSIFICATION

ABDULLAYEV, Kh.M.; GAR'KOVETS, V.G.

Principal tasks of geology in the Uzbek S.S.R. Izv. AN Uz.SSR. Ser.
geol. no.1:5-11 '57. (MIRA 11:9)
(Uzbekistan--Geology)

GAR'KOVETS, V.G.; ZHUKOVSKIY, L.G.; POPOV, A.I.; KOCHNEV, Ye.A.; POPOV, V.I.:
PETROV, N.P.

Importance of facial-paragenetic dissection of series in facial-
paleogeographic, determinative, and detailed prospecting in Central
Asia. Izv. AN Uz.SSR. Ser. geol. no.1:13-16 '57. (MIRA 11:9)
(Soviet Central Asia--Geology, Stratigraphic) (Prospecting)

BATALOV, A.B.; BAYMUKHAMEDOV, Kh.N.; GAR'KOVETS, V.G.; ISAMUKHAMEDOV, I.M.;
KUCHUKOVA, M.S.; MALAKHOV, A.A.; MATSOKINA, T.M.; MIRKHODZHAYEV, I.M.;
MUSIN, R.A.; PETROV, N.P.; TULYAGANOV, Kh.T.; KHAMRABAYEV, I.Kh.

Winner of the Lenin Prize. Uzb.geol.zhur. no.2:94-96 '59.
(MIRA 12:8)

(Abdullaev, Khabib Mukhamedovich)

TULYAGANOV, Kh.T.; GAR'KOVETS, V.G.

Complete exploitation and utilization of the Angren deposits. Uzb.
geol.zhur. no.5:90-92 '59. (MIRA 13:5)

1. Glavnoye upravleniye geologii i okhrany neдр.
(Angren Valley--Mines and mineral resources)

VOL'FSON, N.B.; GAR'KOVETS, V.G.; KHVALOVSKIY, A.G.

Using geophysical methods for solving certain problems of deep
geological mapping in the Almalyk ore deposit. Sov. geol. 4
no.1:109-120 Ja '61. (MIRA 14:1)

(Almalyk region--Ore deposits--Maps)
(Prospecting--Geophysical methods)

GAR'KOVETS, V.G.; DIKENSHTYIN, G.Kh.; YENIKEYEV, P.N.; ZHUKOVSKIY,
L.G.; ZUBOV, I.P.; IL'IN, V.D.; KAYESH, Yu.V.; TAL'-VIRSKIY, B.B.

Problem of prospecting for oil in western Uzbekistan. Geol.
nefti i gaza 5 no.7:7-12 J1 '61. (MIRA 14:9)

1. Ministerstvo geologii i okhrany neдр SSSR, Glavnoye
geologo-razvedochnoye upravleniye Uzbekskoy SSR i Vsesoyuznyy
nauchno-issledovatel'skiy geologorazvedochnyy neftyanoy
institut.

(Uzbekistan—Petroleum geology)
(Uzbekistan—Gas, Natural—Geology)

GAR'KOVETS, V.G.

Developing methods of prospecting for hidden mineralization in
the Almalyk region. Uch.zap.SAIGIMS. no.5:81-91 '61. (MIRA 15:11)

(Almalyk region--Ore deposits)
(Almalyk region--Prospecting)

GAR'KOVETS, V.G.; DIKENSHTeyN, G.Kh.; YENIKEYEV, P.N.; ZHUKOVSKIY, L.G.;
ZUBOV, I.P.; IL'IN, V.D.; KAYESH, Yu.V.; TAL'-VIRSKIY, B.B.

Trends in geologic prospecting for oil and gas in the Uzbek S.S.R.
Trudy VNIGNI no.35:7-26 '61. (MIRA 16:7)

(Uzbekistan—Petroleum geology)
(Uzbekistan—Gas, Natural—Geology)

AKRAMKHODZHAYEV, A.M.; AKHMEDZHANOV, M.A.; BABAYEV, A.G.; BABAYEV, K.L.;
BATALOV, A.B.; BASHAYEV, N.P.; BAYMUKHAMEDOV, Kh.N.; BRAGIN,
K.A.; BORISOV, O.M.; GABRIL'YAN, A.Sh.; GAR'KOVETS, V.G.;
GOR'KOVY, O.P.; GRIGORYANTS, S.V.; IBADULLAYEV, S.I.; ISMAILOV,
M.I.; ISAMUKHAMEDOV, I.M.; KAKHKHAROV, A.; KENESARIN, N.A.;
KRYLOV, M.M.; KUCHUKOVA, M.S.; LORDKIPANIDZE, L.N.; MAVLYANOV,
G.A.; MOTSOIKINA, T.M.; MALAKHOV, A.A.; MIRBABAYEV, M.Yu.;
MIRKHODZHIYEV, I.M.; MUSIN, R.A.; NABIYEV, K.A.; PETROV, N.P.;
POPOV, V.I.; PLATONOVA, N.A.; RYZHKOV, O.A.; SAYDALIYEVA, M.S.;
SERGUN'KOVA, O.I.; SLYADNEV, A.F.; TULYAGANOV, Kh.T.; UKLONSKIY,
A.S.; KHAMRABAYEV, I.Kh.; KHODZHIBAYEV, N.N.; CHUMAKOV, I.D.;
SHAVLO, S.G.

Khabib Mukhamedovich Abdullaev; obituary. Uzb.geol.zhur. 6
no.4:7-9 '62. (MIRA 15:9)
(Abdullaev, Khabib Mukhamedovich, 1912-1962)

KOROLEV, A.V.; KHAMRABAYEV, I.Kh., doktor geol.-min. nauk, glav.
red.; BATALOV, A.B., kand.geol.-min. nauk, **zam. glav.** red.
[deceased]; BAYMUKHAMEDOV, Kh.N., doktor geol.-min. nauk,
red.; BYKOV, L.A., red.; GAR'KOVETS, V.G., red.;
KHLOBUSTOV, A.A., kand. geol.-min. nauk, red.; TERNOVSKAYA,
R.M., red.; GOR'KOVAYA, Z.P., tekhn. red.

[Select works] Izbrannye trudy. Tashkent, Izd-vo AN UzSSR.
Vol.1. 1963. 499 p. (MIRA 16:12)
(Ore deposits)

VOL'FSON, N.B.; GAR'KOVETS, V.G.; KHVALOVSKIY, A.G.

Using combined geophysical methods in prospecting for primary
gold deposits in the mountain region of Uzbekistan. Sov. geol.
6 no.10:76-85 0 '63. (MIRA 17:1)

1. Glavnoye upravleniye geologii i okhrany neдр pri Sovete
Ministrov UzSSR.

TULYAGANOV, Kh.T.; GAR'KOVETS, V.G.

Principal results and the further trend of the works of the Main
Geological-Prospecting Administration of the Uzbek S.S.R.
Uzb. geol. zhur. 7 no.2:9-19 '63. (MIRA 17:2)

VOL'FSON, N.B.; GAR'KOVETS, V.G.

New concepts of the structure and distribution of endo-
genetic mineralization in western Uzbekistan based on
geophysical data. Uzb. geol. zhur. 7 no.3:62-69 '63.

(MIRA 16:11)

1. Glavnoye upravleniye geologii i okhrany nedr pri Sovets
Ministroy UzSSR.

1978-1979, 1980; MINERALS, A.D.

Research on the geophysical prospecting of ore bodies in the Almalyk region. Revved. 1 ed. no. 10: 43-48. 1963.

1. Glavnoye upravleniye geologii i razrany nefti i gazov
Ministroy Uzbekskoy SSR.

KHAMRABAYEV, I.Kh.; AKHMEDZHANOV, M.A.; BORISOV, O.M.; GAR'KOVETS, V.G.;
SHMULEVICH, A.D.

Some characteristics of Cimmerian and Alpine metallogeny in
Uzbekistan. Zakonom.razm.polezn.iskop. 7:295-299 '64.

(MIRA 17:6)

1. Institut geologii AN UzbSSR; Glavnoye upravleniye geologii
i okhrany nedr pri Sovete ministrov UzbSSR; Srednaziatskiy
Institut geologii i mineral'nogo syr'ya.

VOL'FSON, N.B.; GAR'KOVETS, V.G.; KHVALOVSKIY, A.G.

Using geophysical methods in prospecting for porphyry copper
ores in the Almalyk ore-zone. Sov.geol. 7 no.2:138-143 F '64.

(MIRA 17:3)

1. Glavnoye upravleniye geologii i okhrany nedr pri Sovete Minis-
trov Uzbekskoy SSR.

GAR'KOVETS, V.O.

Structural and metallogenetic relationship between the Tien
Shan and the Urals. Sov. geol. 7 no.11:72-83 N '64.

(MIRA 18:2)

1. Glavnoye upravleniye geologii i okhrany nedr pri Sovets
Ministroy U.S.S.R.

GARKOVI, M. A., kandidat tekhnicheskikh nauk; BIZYUKIN, D.D., doktor
tekhnicheskikh nauk, redaktor; BODROV, I.K., redaktor

[Progress made during the fifth five-year plan period in the
building machinery industry] Progress stroitel'nogo mashinostroeniia
v piatol'piatiletke. Leningrad, 1953. 30 p. [Mikrofilm] (MLRA 8:2)
(Building machinery industry)

BOGATSKAYA, Z.D.; GARKOVIK, N.L.

Synthesis of α -propylacrylic acid and its esters. Ukr.khim.
zhur. 27 no.5:671-673 '61. (MIRA 14:9)

1. Odesskiy gosudarstvennyy universitet im. Mechnikova,
kafedra organicheskoy khimii.
(Acrylic acid)

ANTONOVSKIY, V.L.; GARKOVIK, N.L.; Prinsipala uchastiye ANDRIANOVA, L.A.

Production of tert-butyl-peroxyacetate and tert-butyl-peroxybenzoate. Khim. prom. no.2:87-91 F '64.

(MIRA 17:9)

BOGACHEV, A.V.; SPILANOVA, O.S. KOZEMIN, A.A.; LARSEN, H.I.; YEREMIN,
I.A.

General characteristics of the reaction of alkylaluminum
halides with lithium aluminum hydride. Ukr. Khim. Zh. 1964, 10, 1245.
1964, 10, 1245 (1964, 10, 1245)

1. G. A. Bogachev, O. S. Spilanova, A. A. Kozemin, H. I. Larsen, I. A. Yerin.

BOGATSKIY, A.V.; GARKOVIK, N.L.

Synthesis of some alkoxy-substituted 1,3-dioxanes. Zhur. b.
khim. 34 no. 5:168^c My '64. (MIRA 17:7)

1. Odesskiy gosudarstvennyy universitet imeni Mechnikova.

BOGATSKIY, A.V.; GARKOVIK, N.L.

Stereoisomerism of alkoxyalkyl-substituted 1,3-dioxanes. Zhur.
ob. khim. 34 no.11:3850-3851 N '64 (MIRA 18:1)

1. Odesskiy gosudarstvennyy universitet imeni Mechnikova.

GARKOV, N.I.; BOGATSKIY, A.V.; ANDRONATI, S.A.

Synthesis and stereoisomerism o
2-methyl-5-isopropyl-5- α -isopropoxyethyl-1,3-dioxane. Zhur. VKHO
10 no. 2231 '65. (MIRA 1846)

1. Odesskiy gosudarstvennyy universitet imeni Mechnikova.

BOGATSKIY, A.V.; ANDRONATI, S.A.; GARKOVIK, N.L.

Synthesis and some chemical transformations of ethyl- α -
isobutoxyethylmalonic ester. Ukr. khim. zhur. 31 no. 11:
1186-1188 '65 (MIRA 19:1)

1. Odesskiy gosudarstvennyy universitet imeni Mechnikova.

GARKOVSKIY, M. S.

Utilization of flue gas heat of intermittent annealing furnaces. Stok,
1 ker. 9, No 2, 1952.

GARKSVTSEV, S.Ya., inzh.; DEMCHENKO, A.M., inzh.

Concerning the ventilation of 220 kv. air cutouts. Elek.sta.33
no.1:83-85 Ja '62. (MIRA 15:3)
(Electric cutouts--Cooling)

S/119/62/000/004/001/001
D201/D302

AUTHORS: Garkun, A.V., and Sakovich, V.P.

TITLE: New pH-meters ППП-58 (PPP-58) and ЛП-58 (LP-58)

PERIODICAL: Priborostroyeniye, no. 4, 1962, 23 - 24

TEXT: The meters are in mass-production at the Gomel plant of Measuring Instruments. The portable instrument PPP-58 measures the active concentration of hydrogen ions in solutions. Its glass-electrode sphere, when immersed in a solution with active hydrogen ions obtains a potential which is proportional to the pH of the solution. The resulting potential is compared with that of a reference electrode through a micrometric aperture. The measured e.m.f. is applied to the measuring circuit, which consists of a d.c. VTVM with a pencil-type tetrode 2П2П (2P2P) operating as an electrometer. The technical data are as follows: pH range 2 - 12; temperature compensation, in °C: 5 - 65; basic error at 25 ± 5°C and 2 - 12 - pH range not greater than ± 0.1%; max. overall error at the medium temperature 30 - 65°C and for 2 - 10 pH, not greater than ± 0.2. Supply-dry batteries; one 1-KC-γ-3 (1-KS-U-3). Saturn 1.6 volt
Card 1/2

New pH-meters ППН -58 (PPP-58) ...

S/119/62/000/004/001/001
D201/D302

(heater), battery 19-ПМЦГ -0 (19-PMTsG-0), 19 V (anode). The laboratory instrument LP-58 is designed to determine the hydrogen ion concentration of the greater majority of solutions (including corroding solutions) producing poisoning of quinhydrone and other metal electrodes for measuring redox and other potentials, and for potentiometric titration. It consists of a potentiometer circuit amplifier, dry batteries and a standard battery. Its technical data are as follows: Range of measurement of hydrogen ion concentration in pH - 0-13; e.m.f. measurement range in mV - 0 - 13000; pH measurement error less ± 0.1 x (± 0.5 mV); normal ambient temperature range - 15 - 25°C; relative humidity 60 %; temperature range of measurements with quinhydrone electrode 10 - 40°C; with a glass electrode - 20 - 40°C. There are 3 figures.

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Card 2/2

L 10257-66 ENT(m)/EWP(w)/T/EWP(t)/EWP(b) IJP(c) JD/WB/DJ

ACC NR: AP5026733

SOURCE CODE: UR/0286/65/000/017/0005/0005

AUTHOR: Garkunov, D. N.; Kragel'skiy, I. V.

ORG: none

TITLE: Formulation of a discovery [¹⁸Boundary ¹¹friction² between copper and steel]

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 17, 1965, 5

TOPIC TAGS: friction, copper, copper alloy, steel, alloy friction, steel friction, friction coefficient, copper transfer

ABSTRACT: It has been discovered that in friction between a copper alloy and steel, under lubricating conditions which exclude copper oxidation there is a selective transfer of copper from the solid solution of the copper alloy onto the steel and a reverse transfer of copper from steel onto the copper alloy. The phenomenon is accompanied by a decrease of the friction coefficient to a value equivalent to that of the fluid friction and an appreciable reduction of the wear of the friction pair. [MS]

SUB CODE: 11/ SUBM DATE: 02Feb63/ ATD PRESS 4161

Card 1/1

hw

Garkunov, P. N.

✓2714 Behavior of Hard Chromium Deposits Under Cyclic Stress. I-II. A. A. Starnetskiy and D. N. Garkunov. Henry Brucher Translation Nos. 3195 and 3196. From Vestnik Mashinostroyeniya, v. 31, no. 3, 1951, p. 33-37. v. 32, no. 6, 1952, 55-59.) Henry Brucher, Altadena, Calif.

Mechanical strength, nature of failure, and strength of bond between Cr deposit and basis metal. Description of failure of thin and heavy deposits.

VAB MB LFH

GARKUNOV, D.N., kandidat tekhnicheskikh nauk; SLOBODYANNIKOV, S.S., kandidat tekhnicheskikh nauk.

Effect of the hardening temperature of the strength and ductility of chromium-plated parts. Rech.transp. 13 no.1:35-36 Ja-F '53. (MIRA 6:11)
(Chromium plating)

GARKUNOV, D. N.

✓ A Study of Antifriction Properties of Chromium Deposits
Made Porous by Mechanical Means. D. N. Garkunov and
A. A. Polyakov. (Vestnik Mashinostroyeniya, 1953, 33, (6),
55-57). [In Russian]. A comparative study of antifrictional
properties of ordinary porous chromium and chromium made
porous by mechanical means showed the latter to be superior
under conditions of friction against grey iron and also in
regard to the friction coefficient.—v. a.

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JSH

GARKUNOV, D. N.

Effect of the Ratio of Rubbing Surfaces to Hardness on the Slipping Conditions of Machine Parts in Contact. D. N. Garkunov and I. V. Kravchuk (Doklady Akad. Nauk S.S.S.R., 1953, 81, (5), 1085-1088). (In Russian). Frictional forces between, and surface damage suffered by, long and short members of metallic couples consisting of (1) Cu and Al, (2) steel and Al, and (3) steel and Cr steel in relative translatory or rotational motion were studied, the experiments comprising two resp. series in which the long and short components of each couple were interchanged. The Cu/Al couple developed the highest friction. When the softer component of a couple is moved along the harder one, the surface damage is very small, as the soft sample does not indent the hard one, but is flattened out. The difference between the magnitude of the friction occurring when the roles of rubbed and rubbing surface are interchanged is very marked. To decrease friction and surface abrasion the softer sample with the smaller friction area must slide over the harder surface. Projecting edges form on the front and back of the rubbing metals due to plastic flow. (Translated by the National Science Foundation, Washington (NSF-tr-178)).

-J. S. G. T.

GARKUNOV, D.N.

USSR/Miscellaneous - Book review

Card 1/1 Pub. 128 - 23/25

Authors : Garkunov, D. N.

Title : ~~XXXXXXXXXXXX~~
Book review

Periodical : Vest. mash. 1, 89-93, Jan 1955

Abstract : A review is presented of D. V. Pletnev, and V. N. Brusentsov's book, "Technological Principles of Resistant-to-Wear Chrome Plating", published by "Mashgiz" in 1953. The book describes the characteristics of electrolytic plating and theory and methods of resistant-to-wear chrome plating of machine components and tools. Table.

Institution :

Submitted :

GARKUNOV, D.

AID P - 1988

Subject : USSR/Aeronautics

Card 1/1 Pub. 135 - 12/20

Authors : Garkunov, D., Eng. Maj. Kand. of Tech. Sci. and
Polyakov, A. Eng. Maj.

Title : The wear of piston rings in chromed cylinders

Periodical : Vest. voz. flota, 5, 70-71, My 1955

Abstract : The author discusses the dependence of the wear of the
surface on the various kinds of porosity of chrome.
He gives a diagram of wear of a piston-ring moving
on chrome-covered cylinders.

Institution: None

Submitted : No date

GARKUNOV D.N.

Effect of tempering chromium coating on its wear resistance and seizing properties. D. N. Garkunov and P. N. Naumov. *Vestnik Mashinostroyeniya* 65, No. 10, 11-12 (1955). Specimens of steel coated with a coarse (0.5-5 areas/sq. mm.) or fine (30-100 areas/sq. mm.) porous Cr deposit were tempered at up to 600° and tested for abrasion on rotary or reciprocating machines with and without lubrication. Abrasion resistance of the coarse coating dropped to 1/2 on tempering at 400°; but that of fine coating increased 3 times on tempering at 600°. The wear being due, by the loss of wt. Cast iron specimens Cr-plated in the same way had their resistance lowered on tempering, the coarse coating wearing more. A seizing testing machine (described) showed higher friction with higher tempering temp. for the coarse coating and lower for the fine one. Without heat-treatment, the smooth Cr coating had the lowest coeff. of friction followed by coarse and fine coatings.

J. D. Gu

of JP 84

GARKUNOV, D. N.

Influence of the Proportion of the Area of Rubbing on Wear. D. N. Garkunov (*Doklady Akad. Nauk S.S.S.R.*, 1955, 124, 1-3, 225-227. (In Russian). G investigated the rates of wear for the rubbing of two specimens of the same metal. For steel specimens at a rate of slip 15 m./min., if the ratio of the wear of two specimens be plotted against the ratio of the areas of the rubbing surfaces, the curve obtained is linear, but at high area ratios (>50) it flattens out and becomes asymptotic; so that at area ratios of 60-90 the wear ratio $\approx 3\%$. Similar curves were obtained for identical and different pairs of other materials: bronzes, cast Fe, Sn, Pt, porcelain, glass, &c. Since the metals contain micropores, and since the phys. properties and chem. activity of their surfaces vary from place to place (with the Rehbinder effect also taking part if any surface-active substance is present), the observed results can be explained by considering wear as a surface dispersion of separate "weak place" points of contact. However, at low speeds (~ 1 m./hr.), the effect described above should not be observed, and this is confirmed by experiment.

—G. V. E. T.

NE

[Handwritten signature]

3/20/60

GARKUNOV, D.N.; POLYAKOV, A.A.

Investigating the effect of porosity characteristics of chromium
plating on cast iron wear. Tren. i izn. mash. no. 11:108-120 '56.
(Chromium plating)(Piston rings)(Mechanical wear) (MIRA 9:9)

18
3
14E2C
Testing the Porosity of Chromium Plating. A. A. Polyakov
and D. N. Barkunov. (Zavodskaya Laboratoriya, 1958, 22,
(4) 482-484). [In Russian]. A special microscope for the
examination and photography at magnifications of $\times 30$
of chromium plating on cylinders is described. The plating
porosity is evaluated by comparison with standards. — S. K.

PL any

PHASE I BOOK EXPLOITATION

SOV/4255

Garkunov, Dmitriy Nikolayevich

Povysheniye iznosostoykosti detaley samoletov (Improving the Wear Resistance of Aircraft Parts) Moscow, Oborongiz, 1960. 138 p. Errata slip inserted.
3,000 copies printed.

Reviewer: I.V. Kragel'skiy, Doctor of Technical Sciences, Professor;
Ed.: I.L. Yanovskiy, Engineer; Managing Ed.: S.D. Krasil'nikov, Engineer;
Ed. of Publishing House: L.I. Sheynfayn; Tech. Ed.: V.I. Oreshkina.

PURPOSE: This book is intended for designers, process engineers, and specialists working on the problems of improving wear resistance of aircraft parts.

COVERAGE: The book deals with the causes of wear of aircraft parts and methods of counteracting it. Methods of improving wear resistance and operational reliability are also presented. The author thanks Professor I.V. Kragel'skiy for his assistance. There are 65 references: 58 Soviet, 6 English, and 1 German.

Card 1/3

Improving the Wear Resistance of Aircraft Parts

80V/4255

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Improving the Wear Resistance of Aircraft Parts

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10-3-60

PHASE I BOOK EXPLOITATION

SOV/4688

Garkunov, Dmitriy Nikolayevich

Povysheniye iznosostoykosti detaley mashin (Increasing the Wear Resistance of Machine Parts) Moscow, Mashgiz, 1960. 162 p. 6,500 copies printed.

Reviewer: G. A. Preys, Candidate of Technical Sciences; Chief Ed. (Southern Department, Mashgiz): V. K. Serdyuk, Engineer; Ed.: N. P. Onishchenko.

PURPOSE: This book is intended for designers, process engineers, and specialists concerned with increasing the wear resistance of machine parts.

COVERAGE: The author discusses problems involved in increasing the wear resistance of eye-and-bolt joints, engine cylinders, piston rings, and sliding bearings. He examines the reasons for the breakdown of working parts and makes recommendations for increasing their operational reliability. New explanations, based on present-day information on the structure of metal friction surfaces, are given for certain regularities of metal wear. Special attention is given to an investigation of the antifriction properties of chromium and nickel-phosphorus coatings. The phenomenon of mutual transfer ["atomarnyy"] of metal component elements from one rubbing part to another is described.

Card ~~1/5~~

Increasing the Wear Resistance (Cont.)

SOV/4688

Also included is a hypothesis regarding the role of "weak spots" in the wear, and development of these "weak spots" with time. The following scientists are mentioned as having contributed to the field: B. D. Grozin, B. D. Deryagin, P. Ye. D'yachenko, G. I. Yepifanov, A. K. Zaytsev, D. V. Konvisarov, B. I. Kostetskiy, I. V. Kragel'skiy, V. D. Kuznetsov, P. A. Rebinder, M. M. Khrushchov, V. S. Shchedrov. There are 59 references: 54 Soviet and 5 English.

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GARKUNOV, D. N.

"Experimental Study of the Effect of the Ratio of Friction Surfaces on the Ratio of Wear by Weight (Eksperimental'noye issledovaniye vliyaniya otnosheniya ploshchadey treniya na otnosheniye vesovykh iznosov) p. 41-48, in book Research in the Physics of Solids, Moscow, Izd-vo AN SSSR, 1957. 277 p. Ed. Bol'shanina, M. A. Tomsk Universitet, Siberskiy fiziko-tekhnicheskiy institut.

Personalities: Kosenko, I. A.; In'shakov, N. N., Seredenko, B. N.; Khrushchov, M. M., Professor; Radchik, V. A.; and Radchik, A. S., Wear-testing machines used: type A. Ye.-5 and type MI. Materials tested: steel 45, bronze BrAzhMts, and plexiglass. Lubricant used: type MS plus abrasive. There are 3 figures, 2 tables, and 13 references, 12 of which are Soviet.

This collection of articles is meant for metallurgical physicists and for engineers of the metal-working industry. This book contains results of research in the field of failure and plastic deformation of materials, mainly of metals. Problems of cutting, abrasion, friction, and wear of solid materials. (metals) are discussed.

SOV/137-59-1-1364

Translation from: Referativnyy zhurnal. Metallurgiya, 1959, Nr 1, p 181 (USSR)

AUTHOR: Garkunov, D. N.

TITLE: On the Transfer of Material (Seizing) During Friction of Bronze Against Steel [O perenose (skhvatyvani) materiala pri trenii bronzy o stal']

PERIODICAL: Dokl. 7-y Nauchn. konferentsii. posvyashch. 40-letiyu Velikoy Oktyabr'skoy sots. revolyutsii. Nr 2. Tomsk, Tomskiy un-t, 1957, pp 46-47

ABSTRACT: The following phenomena were observed in the process of friction: (1) Transfer (T) of steel onto the surface of the bronze (B); (2) T of B onto the surface of steel; (3) atomic T of individual elements of the B onto the surface of the steel and vice versa. The first two forms of T are undesirable, because they increase the value of the coefficient of friction. In the case of the third form of T, the coefficient of friction remains unaltered, the friction surfaces become copper-colored and acquire a mirror-like finish, while the wear is virtually eliminated. The process of atomic T varies depending on the type of lubricants used. When BrAZhMts bronze is employed,

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SOV/137.59.1-1364

On the Transfer of Material (Seizing) During Friction of Bronze Against Steel

the T proceeds only in one direction, namely, from steel to B. The surface layer of the B is observed to become enriched with Cu.

P. N.

Card 2/2

AUTHOR
TITLE

GARKUNOV, D.M.; ARAGEL'SKIY, I.V.
On Atomic Capture from Solids in Friction.

PA - 3523

PERIODICAL

(Ob atomarnom skhvatyvanii materialov pri trenii - Russian)
Doklady Akademii Nauk SSSR, 1957, Vol 113, Nr 2, pp 326-327, (U.S.S.R.)
Received 6/1957
Reviewed 7/1957

ABSTRACT

On the occasion of friction of two surfaces an intensive diffusion can take place as a consequence of the plastic deformation of the surface layers. This was ascertained in the case of friction of bronze against steel by watching the selective diffusion. A sufficiently thick layer which consists in the main of the copper eliminated from the solid solution, appeared on the surface of the steel sample. It is just this phenomenon that describes the selective atomic intermeshing. The enrichment of copper on the surface of friction was ascertained by roentgen-structure analysis. The selective intermeshing can also be ascertained by radioactive zinc. In the surface layer that has appeared the radioactive zinc decreased as against its content in the original bronze by 10-15 times. The experiments were carried out by means of a friction machine with reciprocating motion (100 reciprocating motions of 5 mm length per minute). Two sorts of bronze were investigated. In the case of a friction lasting 30 to 40 minutes of one of the sorts of bronze against steel in an alcohol-glycerol mixture a thin bronze layer enriched by copper was smeared on the steel sample. In a test lasting for 20 to 30 hours of the same bronze - steel pair with increased stresses (120 kg/cm²) the thickness of this layer increased perceptibly. On

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On Atomic Capture from Solids in Friction.

PA 1011

the friction surface of the bronze sample a bronze layer enriched by copper did not appear. In the case of friction of the other sort of bronze against steel a bronze layer enriched by copper arose both on the bronze and on the steel. This layer did not become thicker enough in consequence of increased duration of testing. When the alcohol-glycerol mixture was replaced by oil "MS", no atomic intermeshing did occur in both cases of the here investigated friction pairs. Such atomic intermeshing is not only noticed in the case of metals but in the case of graphite as well. Friction pairs can be put together which practically do not suffer any attrition. The metal here passes from one surface to the other and then returns to the first surface.
(With 1 schedule).

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Card 2/2

21.2.1956
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GARKUNOV, D.N.

Investigating the wear of coupled parts due to their reciprocating
rotary motion. Tren.i iss. mash. no.14:93-99 '60.

(MIRA 13:8)

(Mechanical wear)

GARKUNOV, D.N.; SLOBODYANNIKOV, S.S.; KHRUSHCHEV, M.M.

In memory of Leonid Vladimirovich Elin and the bibliography of
his works. Tren.i izn. mash. no.14:290-293 '60.

(MIRA 13:8)

(Elin, Leonid Vladimirovich, 1910-1957)

S/020/60/133/005/016/019
B004/B060

AUTHORS: Garkunov, D. N., Lozovskiy, V. N., Polyakov, A. A.
TITLE: On the Mechanism of Reciprocal Atomic Transfer of Copper
in the Friction of Bronze on Steel
PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 133, No. 5,
pp. 1128 - 1129

TEXT: In a previous paper (Ref. 1) the authors studied the friction of BrOCH - (BrOSN)- and $\text{BrO}\phi$ (BrOF) bronze on steel with lubrication by a glycerin-alcohol mixture or pure glycerin. A thin, copper-enriched bronze layer then formed on the steel surface, whose particles were then again transferred onto the bronze, and from there again onto the steel, without any wear. The authors define this phenomenon as "atomic adhesion". The present paper offers an explanation for it. The total area of contact is considerably smaller than the nominal contact area. A considerable amount of heat develops in the contact points, while the copper of the oxide layer is reduced by glycerin mainly in such points as exhibit a high copper content. These points of the bronze adhere to the steel.

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On the Mechanism of Reciprocal Atomic
Transfer of Copper in the Friction of
Bronze on Steel

S/020/60/133/005/016/019
B004/B060

The bronze sections that are not copper-enriched are worn out and washed away by glycerin. The steel surface is covered by a layer of almost pure copper. On further friction there occurs a transfer of copper from steel to bronze. The selectivity of this process was proved by the following experiments: 1) Two steel samples were rubbed onto each other on a machine of the type "MM" ("MI") under a pressure of 30 kg/cm^2 and a gliding speed of 0.4 m/sec . Glycerin, in which black CuO was suspended, served as lubricant. After 20-30 min the steel samples exhibited a touch of copper. 2) A steel rod was clamped in a lathe. The purity of its surface corresponded to class 11 of ГОСТ 2789-52 (GOST 2789-52). After moistening with glycerin a BrOF bronze sample was pressed at 100 kg/cm^2 onto the steel rod rotating at 40 rpm (Fig. 1). In the first variant of this experiment the bronze sample was given a feed so that it touched every point of the steel bar only once. In this case the steel rod did not show any traces of copper. In the second variant, the bronze sample remained pressed onto a point of the steel rod. After 100 revs both the steel rod and the bronze sample were covered with copper. When using other lubricants (kerosene, mineral oils, distilled water) this effect

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On the Mechanism of Reciprocal Atomic
Transfer of Copper in the Friction of
Bronze on Steel

S/020/60/133/005/016/019
B004/B060

was not observed, which might be exploited for a new method of working
on friction surfaces (Authors' Patent No. 115744). There are 1 figure
and 2 Soviet references.

PRESENTED: March 30, 1960, by P. A. Rebinder, Academician

SUBMITTED: March 24, 1960

Card 3/3

Garkunov, D. N.

"Some Laws of the Wear of Metals Under Conditions of Dry and Boundary Friction and Means for Reducing the Wear" p. 26

Sukhoie i granichnoye treniye. Friksionnyye materialy (Dry and Boundary Friction. Friction Materials) Moscow, izd-vo AN SSSR, 1960. 302 p. Errata slip inserted. 3,500 copies printed. (Series: Its: Trudy, v. 2)

Sponsoring Agency: Akademiya nauk SSSR. Institut mashinovedeniya.
Resp. Ed.: I. V. Kragel'skiy, Doctor of Technical Sciences, Professor; Ed. of Publishing House: K. I. Origorash; Tech. Ed.: S. G. Tikhomirova.

The collection published by the Institut mashinovedeniya, AN SSSR (Institute of Science of Machines, Academy of Sciences USSR) contains papers presented at the III Vsesoyuznaya konferentsiya po treniyu i iznosu v mashinakh (Third All-Union Conference on Friction and Wear in Machines, April 9-15, 1958).

GARKUNOV, D. N., AND VISHENKOV, S. A.

Antifriction Properties of the Nickel-Phosphorus Coating

Povysheniye iznosostoykosti i sroka sluzhby mashin. t. 2 (Increasing the Wear Resistance and Extending the Service Life of Machines. v. 2) Kiyev, Izd-vo AN UkrSSR, 1960
290 p. 3,000 copies printed. (Series: Its: Trudy, t. 2)

Sponsoring Agency: Vsesoyuznoye nauchno-tekhnicheskoye obshchestvo mashinostroitel 'noy promyshlennosti. Tsentral 'noye i Kiyevskoye oblastnove pravleniya. Institut mekhaniki AN UkrSSR.

Editorial Board: Resp. Ed.: B. D. Grozin; Deputy Resp. Ed.: D. A. Draygor; M. P. Braun, I. D. Faynerman, I. V. Kragel 'skiy; Scientific Secretary: M. L. Barabash; ED. of v. 2: Ya. A. Samokhvalov; Tech. Ed.: N. P. Rakhlina.

COVERAGE: The collection contains papers presented at the Third Scientific Technical Conference held in Kiyev in September 1957 on problems of increasing the wear resistance and extending the service life of machines. The conference was sponsored by the Institut stroitel 'noy mekhaniki AN UkrSSR (Institute of Structural Mechanics of the Academy of Sciences Ukrainian SSR), and by the Kiyevskaye oblastnaya organizatsiya nauchno-tekhnicheskogo obshchestva mashinostroitel 'noy promyshlennosti (Kiyev Regional Organization of the Scientific Technical Society of the Machine-Building Industry).

S/123/61/000/012/022/042
A004/A101

AUTHOR: Garkunov, D. N.

TITLE: Investigating the strength of chromium platings in contact impact loading

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 12, 1961, 91, abstract 12B661 (V sb. "Povysheniye iznosostoykosti i sroka sluzhby mashin. v. 2", Kiyev, AN UkrSSR, 1960, 200-205)

TEXT: By comparative impact tests with and without shear of chromium platings it was found: 1) The strength of the chromium plating in impact loading depends on the hardness of the base material. The best results were obtained on a steel base with 38-42 R_C hardness (for 30XГСА [30KhGSA] grade steel). With a lower hardness of the base, the chromium plating is pressed through and destroyed, with greater hardness - 54-62 R_C for U8 grade steel - the plating is peeling off. 2) The strength of chrome platings is lower, by a factor of 15-20, in impacts with shear than without, moreover, a porous chrome coating stands a 2-3 times lesser number of loads than a smooth chrome plating. By increasing the layer thickness from 0.03 to 0.15 mm its strength is 2-3 times increased, ✓

Card 1/2

S/123/61/000/012/022/042
A004/A101

Investigating the strength ...

while heat treatment (annealing at 500°C) does not increase the strength. The tests were carried out with specimens chrome-plated in an electrolyte of 250 g/l CrO_3 and 2.5 g/l H_2SO_4 , at $50 - 63^{\circ}\text{C}$ and a current density of 60 amp/dm^2 . Dechroming was carried out at 50°C and a current density of 40 amp/dm^2 for 10 minutes. The results obtained made it possible to use more expediently the chrome plating in some important friction units subjected to impact loads, e.g. in antifriction bearings, hinged bolt joints, piston and wrist pins, etc.

L. Kamionskiy

[Abstracter's note: Complete translation]

Card 2/2

S/124/61/000/009/054/058
D234/D303

AUTHOR: Garbunov, D.N.

TITLE: Investigating the strength of a chrome coating in contact percussion loading

PERIODICAL: Referativnyy zhurnal. Mekhanika, no. 9, 1961, 47, abstract 9 V435 (V sb. Povysheniye iznosostoykosti i sroka slushby mashin. v. 2, Kiyev, AN USSR, 1960, 200-205)

TEXT: A description of the results of experiments on determining the relation between the form of chrome coating of journals and its life (number of impacts up to failure) with respect to repeated impacts of a steel ball. The methods of experiment allowed, with the aid of a specially designed device, the directing of impacts to the same point of either a fixed journal or a rotating journal - impact with displacement. It was detected that a porous chrome layer has a life 2-3 times shorter compared with a smooth

Card 1/2

Investigating the strength...

S/124/61/000/009/054/058
D234/D303

chrome coating, the life of the coating in case of impact with displacement is 15-20 times shorter than in case of impact without displacement; if the thickness of the coating is increased from 0.03 to 0.15 mm, its life increases 2-3 times. [Abstracter's note: Complete translation]

Card 2/2

1.1800
S/711/60/014/000/004/013
D262/D301

AUTHOR: Garkunov, D.N.

TITLE: Investigating wear and tear of materials for components in reciprocating-rotative motion

SOURCE: Akademiya nauk SSSR. Institut mashinovedeniya. Treniye i iznos v mashinakh, v. 14, 1960, 93 - 99

TEXT: The seizing effect on the materials used for components working at reciprocating-rotative motion, hardness of oxidized, phosphatic and electrolytic surface coatings, and size of clearances, as applicable for operational conditions for aircraft hinged bolt joints, are investigated. Specimens in the form of bolt-and-bush joints, made of materials of various hardness, with various surface treatments, and having different clearances between the bolt and the bush were tested on the testing machine 77-MT-2 at the speed of 350 movements/min., the bush being rotated relatively to the bolt. It is concluded that to increase the wearing qualities of the bolt and the bush it is necessary to increase their hardness, apply

Card 1/2

Investigating wear and tear of ...

S/711/60/014/000/004/013
D262/D301

chrome plating on the bolt, or oxidizing or phosphating of both components. There are 3 figures and 3 tables.

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S/711/60/014/000/013/013
D232/D301

AUTHORS: Garkunov, D.N., Slobodyannikov, S.S., and Khrushchov, M.K.

TITLE: In memory of Leonid Vladimirovich Yelin

SOURCE: Akademiya nauk SSSR. Institut mashinovedeniya. Treniye i iznos v mashinakh, v. 14, 1960, 290 - 291

TEXT: Yelin died in Odessa in 1957 at the age of 47. He graduated in Marine Mechanical Engineering in 1936 at the Odesskiy institut inzhenerov morskogo flota (Odessa Institute of Maritime Fleet Engineers) and obtained a Degree of Candidate of Technical Sciences in 1958. He subsequently took up a teaching appointment at the Department of Metal Technology at the above Institute. Whilst his activities were mainly pedagogical, he also carried out research on the friction and wear in machine components. His doctorate was obtained at the Institut mashinovedeniya Akademii nauk SSSR (Institute of Machine Sciences of the Academy of Sciences USSR). He put forward a new explanation for the possible causes of wear of metals in contact, having inhomogeneous mechanical properties, and without des-
Card 1/2

In memory of Leonid Vladimirovich Yelin S/711/60/014/000/C13/013
D232/D301

stroying the layers of oil which separate the bodies in contact. Together with Professor V.A. Anichkov, Yelin developed the AE-5 machine for testing metal specimens for friction.

Card 2/2

S/123/62/000/017/006/006
A052/A101

AUTHORS: Garkunov, D. I.; Lozovskiy, V. N.

TITLE: The effect of frictional bronze and brass plating on the surface finish

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 17, 1962, 33 - 34, abstract 17B203 (In collection: "Kachestvo poverkhnosti detaley mashin". Moscow, AN SSSR, no. 5, 1961, 386 - 391)

TEXT: The principal methods of utilizing the effect of metal transfer in the process of friction for improving the running-in quality and raising the antiscoring properties and wear resistance of friction surfaces of machine elements are briefly discussed. A frictional method of imparting antiscoring properties to the surface of steel elements of friction couples by a preliminary application of a thin brass or tin bronze layer is described. Frictional brassing and bronzing of piston bolts, cylinders and other parts can be performed by means of the simplest appliances on an ordinary lathe. A schematic drawing of an appliance is given, the mode of operation of which consists in utilizing the effect

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The effect of frictional bronze and...

S/123/62/000/017/006/006
A052/A101

of metal transfer in the process of sliding friction of a copper alloy rod against a steel surface. The frictional treatment is carried out at a sliding speed of 0.2 m/sec., specific pressure of $10 \pm 1 \text{ kg/mm}^2$ and a longitudinal feed of the copper alloy rod of 0.1 - 0.2 mm per revolution of the steel part. The results of investigations of the effect of brassing on antifriction properties and scoring resistance at sliding friction of steel elements are cited. It is shown that brassing improves the running-in quality and in particular the antiscoring properties of elements of little-moving connections working at low sliding speeds. Also the results are given of investigations of the effect of frictional brassing on the fatigue strength and the surface finish of samples of 30 XГСА (30KhGSA) steel heat-treated to the hardness of HRC 32-36 and 40-42. It is established that the samples brass-plated by the frictional method have at 10×10^6 cycle testing a fatigue limit equal to that of unplated samples and the surface finish is equal to the initial one. It is pointed out that frictional copper and bronze plating is worth applying to precision couple elements only and also as a sublayer for a subsequent depositing of electrolytic copper platings from acid baths without using cyanogen electrolytes.

[Abstracter's note: Complete translation]

Card 2/2

S/883/62/000/000/005/020
E194/E155

AUTHOR: Garkunov, D.N.

TITLE: Methods of assessing the anti-friction and strength properties of thin metallic surface coatings which are applied when repairing rubbing parts

SOURCE: Metody ispytaniya na iznashivaniye; trudy soveshchaniya, sostoyavshegosya 7-10 dek. 1960. Ed. by M.M. Khrushchov. Moscow, Izd-vo AN SSSR, 1962. 57-62

TEXT: A good machine for assessing wear resistance is type -5 (AYe-5), in which the ends of three cylindrical specimens 10 mm in diameter rub against a rotating disc. The machine can be used for loadings up to 200 kg/cm² at sliding speeds up to 20 m/sec and temperatures up to 200 °C with various conditions of lubrication. The coefficient of friction can be measured, and wear is assessed by loss of weight. Reciprocating sliding-wear machine type 77-MT-1 (77-MT-1) also gives good results. The machines were used to study the influence of porosity of chromium plating on cast iron; the best wear resistance was obtained from chromium of fine porosity. The ability of the material to run-in can also be

Card 1/3

Methods of assessing the anti- ...

S/883/62/000/000/005/020
E194/E155

assessed on machine type AYe-5 and tests showed that smooth, non-porous chrome did not run-in very well. Machine type 77-MT-1 was used to assess the maximum loads which the coating materials could withstand on prolonged operation under given friction conditions, taken at 10 000 cycles. Rubbing parts made of aluminium alloys treated by deep anodising were tested after first running-in, and it was found that a load of 200 kg/cm² should not be exceeded when steel grade 30XГСА (30KhGSA) (with a Rockwell hardness of 40) slides on anodised duralumin. The ability of the material to continue operating when the lubricant supply has been cut off may be assessed in the AYe-5 machine. The ability of the coating to resist seizure was assessed by clamping a cylinder between two crossed-cylinders, then pulling it through on a tensile testing machine and recording friction against time. The strength characteristics of the surface coatings must also be assessed. The ability of the material to withstand cyclic contact loading is assessed in a two- or three-roller machine. The test piece is driven between loaded rollers on either side of it, which slip. The specimen undergoes two complete loading cycles in every revolution. The tests are usually made with lubricant.

Card 2/3

Methods of assessing the anti- ...

S/883/62/000/000/005/020
E194/E155

To assess the ability of the coating to withstand dynamic loading a rig was devised in which a weight is periodically dropped on to a rotating cylindrical specimen. Tests on electro-plated surfaces showed that their strength depends on the strength of the base material, the heat treatment conditions and on the plating conditions.

There are 5 figures.

Card 3/3

L 40003-65 EWT(d)/EWT(m)/ENP(w)/EWA(d)/ENP(v)/T/ENP(t)/ENP(k)/ENP(h)/ENP(b)/
ENP(1) Pf-4 IJP(c) JD/QS

ACCESSION NR: AT4049818

S/0000/64/000/000/0095/0098

AUTHOR: Garkunov, D.N.; Lozovskiy, V.N.

TITLE: Investigation of the effect of anodizing on the antifriction properties of aluminum alloy parts

SOURCE: Soveshchaniya po uprochneniyu detaley mashin, 1962. Protsesty uprochneniya detaley mashin (Processes of the hardening of machine parts); doklady soveshchaniya. Moscow, Izd-vo Nauka, 1964, 95-98

TOPIC TAGS: anodizing, aluminum, aluminum alloy, aluminum alloy anodizing, aluminum alloy wear resistance, friction, duralumin

ABSTRACT: Friction parts made of aluminum alloys with thick-layer anodizing of the working surfaces are being widely used at the present time. Tests of nonanodized and anodized D16A-T duralumin together with heat-treated 30KhGSA steel and MK-22 oil lubrication showed that thick-layer anodizing lowers the coefficient of friction under 50-90 kg/cm² loads from 0.032 to 0.014. Anodizing also lowers the possibility of scoring and improves the adhesion of the coating to the base metal. Tests were made in which these properties were estimated on the 77MT-2 friction machine with reciprocating motion and on a device for drawing testing of metals. In the 77MT-2 machine there was

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L 40003-65

ACCESSION NR: AT4049818

2
friction between a fixed, 6 mm diameter shaft with a working width of 10 mm against a sample set at an angle of 60°. The sample reciprocated 770 times per minute, and each test took 30 minutes under a constant load. It was found that the "D16 anodized alloy-steel" pair worked without jamming for 23,000 turns at 60° under a load of 200 kg/cm². Under the same conditions, a "steel-steel" pair resisted a load of 60 kg/cm² and a "D16 non-coated alloy-steel" pair resisted only 15 kg/cm². Tests were also made on the drawing machine. The tests indicated that with straight friction pairs the best results are obtained with nickel coating instead of chromium. The nickel coating has lower wear resistance, but it wears out the adjoining anodized coating to a lower extent. The nickel and chromium coatings wear out the anodized coating at 12-50% of the rate of normalized steel. Orig. art. has: 4 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 21May64

ENCL: 00

SUB CODE: MM

NO REF SOV: 001

OTHER: 000

Card 2/2 pm

FYZHEVICH, L.M., doktor tekhn. nauk, prof.; KOSTERIN, Yu.I.,
kand. tekhn.nauk, retsenzent; GARKUNOV, D.N., doktor
tekhn. nauk, red.

[Design of friction brakes] Raschet friktsionnykh tormozov.
Moskva, Izd-vo "Mashinostroenie," 1964. 227 p.
(MIRA 17:6)

YELIZAVETIN, M.A.; SATEL', E.A.; SLOBODYANNIKOV, S.S., kand.
tekhn. nauk, retsenzent; GARKUNOV, D.N., doktor tekhn.
nauk, red.

[Technological methods for increasign the durability of
machinery; increasing the operational properties and
reliability of machine parts] Tekhnologicheskije sposoby
povysheniia dolgovechnosti mashin; povyshenie ekspluatatsion-
nykh svoistv i nadezhnosti raboty detalei mashin. Moskva,
Izd-vo "Mashinostroenie," 1964. 438 p. (MIRA 17:8)

VINOGRADOV, G.V., doktor khim. nauk, prof., otv. red.; DINTSES,
A.I., doktor khim. nauk, otv. red.; GARKUNOV, D.N.,
doktor tekhn. nauk, otv. red.; GORSHKOV, G.B., red.

[Theory of lubricating action and new materials] Teoriia
smazochnogo deistviia i novye materialy. Moskva, Nauka,
1965. 245 p. (MIRA 18:7)

1. Akademiya nauk SSSR. Nauchnyy sovet po treniyu i
smazkam.

GARKUNOV, D.N., doktor tekhn. nauk; LOZOVSKIY, V.N., kand. tekhn. nauk

Frictional copper plating. Mashinostroitel' no.10:20 0 '65.
(MIRA 18:10)

L 21-5-68 TIT(t)/T/ENP(t) DJ
ACC NR: AF6009528 (A)

SOURCE CODE: UR/0413/66/100/001/0076/0050

INVENTOR: Garkunov, D. N.; Lozovskiy, V. N.; Shimanovskiy, V. G.

ORG: none

TITLE: Metal-coating grease. Class 23, No. 179409

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 5, 1966, 50

TOPIC TAGS: lubricant, grease, antiseize additive, antiwear additive, lubricant additive/~~TsIATIM-201, TsIATIM-203~~

ABSTRACT: An Author Certificate has been issued for a metal-coating grease, such as TsIATIM-201 or -203, whose antiseizure (EP) and antiwear properties are improved and to which metal-coating properties are imparted by the addition of 5 to 60% anti-friction metals such as lead, tin, copper, zinc, and/or alloys thereof. The metals are in the form of fine powders having a particle size of up to 100 microns. [SM]

SUB CODE: 11/ SUBM DATE: 14May62/ ATD PRESS: 4222

Card 1/1

UDC: 621.892.84

L 37681-66 EWT(m)/T/EXP(t)/ETI DJ/JD

ACC NR: AP6011250

(N)

SOURCE CODE: UR/0413/66/000/006/0093/0093

AUTHOR: Garkunov, D. N.; Markov, A. A.; Colikov, G. A.

23

ORG: none

B

TITLE: Determining antifriction properties of materials. Class 42, No. 179975

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 6, 1966, 93

TOPIC TAGS: antifriction property, friction pair

ABSTRACT: This Author Certificate introduces a method of determining the antifriction properties of materials. To achieve better selection of material for friction pairs, an inert metal such as gold is used as a standard for measuring the contact potential difference of each friction pair specimen; the standard and specimen are measured in various lubricants using a device for measuring the work function of capacitor electrons. Materials with the highest potential difference are selected. [LD]

SUB CODE: 11/ SUBM DATE: 21Sep64

Card 1/1

UDC: 620.178.162.2

KRAGEL'SKIY, Igor' Viktorovich, doktor tekhn. nauk, prof. Prinsipali
uchastie: TROYANOVSKAYA, G.I., kand. tekhn. nauk; DEMKIN, N.B.,
kand. tekhn. nauk; KOSTERIN, Yu.I., kand. tekhn. nauk; KUDINOV,
V.A., kand. tekhn. nauk; GARKUNOV, V.I., inzh., red.;
BYSTRITSKAYA, V.V., red. izd-va; TIKHANOV, A.Ya., tekhn. red.;
SOKOLOVA, T.F., tekhn. red.

[Friction and wear] Trenie i iznos. Moskva, Mashgiz, 1962. 382 p.
(MIRA 15:3)

(Friction) (Mechanical wear)
(Lubrication and lubricants)

GARKUNOV, V.K.

5

Wrapping material for cheese, meat, and other foods.
V. D. Garkov, A. A. Bedin, S. M. Babin, A. S. Nikolayev,
and V. K. Garkunov. U.S.S.R. Pat. 170, 812, 25, 1973.
To make it gas and moisture impermeable, paper, cello-
phane, or thofol is coated with a mixt. of 40-60 parts of
paraffin melted with polyisobutylene at 160-200°. To pre-
vent contact of the protective mixt. with the food, a film
of the paraffin-polyisobutylene mixt. is interlayered between 2
sheets of paper, etc. M. Hooch-

GARKUNOV, V.P.

GARKUNOV, V.P. (Leningrad)

Apparatus for oxidizing ammonia and obtaining ammonium nitrate.
Khim.v shkole 12 no.6:40-42 N-D '57. (MIRA 10:12)
(Oxidation) (Ammonia) (Ammonium nitrate)

GARKUNOV, V.P.

Apparatus for the demonstration of experiments in the thermal decomposition of matter. Khim.v shkole 14 no.3:60-62 My-Je '59.
(MIRA 12:9)

1. Leningradskiy pedagogicheskiy institut im. Gertsena.
(Chemistry--Study and teaching) (Pyrolysis)

GARKUNOV, V.P.

Methods of studying alcohols in an organic chemistry course.
Khim. v shkole 16 no.1:24-32 Ja-F '61. (MIRA 14:1)
(Alcohols—Study and teaching)

GARKUNOV, V.P.; CHEREPENNIKOV, A.A., prof., red.; LEBEDEVA, I.,
red.

[Chemistry; a textbook for students entering the Leningrad
Institute of Engineering and Construction] Khimiia; ucheb-
noe posobie dlia postupaiushchikh v LISI. Leningrad, Leningr.
inzhenerno-stroit. in-t, 1964. 103 p. (MIRA 18:3)

ACC NR: AP6027190 (N) SOURCE CODE: UR/0078/66/011/008/1822/1826

AUTHOR: Plyshevskiy, Yu. S.; Garkunova, N. V.; Leont'yeva, I. A.; Zhitkova, T. N.

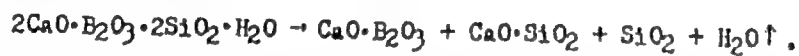
ORG: none

TITLE: Decomposition of datolite on heating

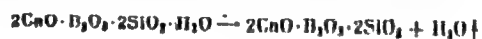
SOURCE: Zhurnal neorganicheskoy khimii, v. 11, no. 8, 1966, 1822-1826

TOPIC TAGS: boron mineral, calcium mineral, borate, borate glass, silicate

ABSTRACT: The thermographic method was used to determine the heat effects associated with phase transformations and the heat capacity of the mineral datolite. The phase transformations were found to occur only above 920°. In the 950-980°C range, the mineral decomposes as follows:



Monocalcium borate $\text{CaO} \cdot \text{B}_2\text{O}_3$, monocalcium silicate $\beta\text{-CaO} \cdot \text{SiO}_2$, quartz $\alpha\text{-SiO}_2$, and SiO_2 -cristobalite are thus formed. At 1100°C, the mixture of newly formed compounds melts, forming borate glass. The heat of reaction of the datolite decomposition is 6.4 kcal/mole. The heat of reaction of the dehydration



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UDC: 546.824'42'273:542.92

L 457Q7-66
ACC NR: AP6027190

is 12.1 kcal/mole. The heat capacity of datolite between 100 and 500°C ranges from 0.19 to 0.52 cal/g. Calcined datolite and also calcined datolite ores can be used as boric microfertilizer, since they contain boron in the citric-soluble form. Orig. art. has: 3 figures and 4 tables.

SUB CODE: 08/ SUBM DATE: 10Nov64/ ORIG REF: 006/ OTH REF: 001

Card 2/2 *ULR*

28353

S/124/61/000/007/022/044
A052/A101

26.2/20

AUTHORS: Shnee, Ya. I., Garkusha, A. V.

TITLE: The effect of the swirling method on the magnitude of output losses

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 7, 1961, 31-32, abstract 7B209
("Tr. Khar'kovsk. politekhn. in-ta", 29, no. 2, 1960, 89-101)

TEXT: A comparison of the magnitude of losses with the outlet velocity is made at different methods of designing the blades along the height and at given dimensions of the flow-through section of the last stage and its given capacity. The total loss with the outlet velocity of the last stage per 1 kg of liquid is expressed, in fractions of the available drop, as follows:

$$\Delta \bar{h}_{c_2} = \frac{A \int_{r_1}^{r_e} \frac{c_2^2}{2g} c_{2z} \gamma_2^2 \tilde{\alpha} r dr}{\int_{r_1}^{r_e} c_{2z} \gamma_2^2 \tilde{\alpha} r dr h_{st}} = \frac{\int_{r_1}^{r_e} \frac{c_2^2}{c_{11}^2} \frac{c_{2z}}{c_{11}} r dr}{\int_{r_1}^{r_e} \frac{c_{2z}}{c_{11}} \frac{1}{1 - \rho_{r_1}} r dr}$$

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The effect of the swirling method ...

28353 3/124/61/000/007/022/044
A052/A101

where c_2 - velocity of the flow when leaving the blade; c_{2z} and γ_2 - axial velocity and specific gravity in the same section respectively; r_i and r_e - internal and external radii of the stage; h_{st} - the available drop in the stage (which is assumed to be constant over the height of the blade); c_{1i} - velocity after leaving the nozzle in the internal diameter; ρ_{r1} - the degree of reactivity in the same diameter. Different variants of the execution of the stage were calculated. The calculation was carried out at $g_{np} = 0.45$, $k = 133$, $M_{n3g} = 0.926$ (which corresponds to the near-critical drop), $\rho_{r1} = 0$; $r_e/r_i = 2$ and at two values of $u_1/c_{1i} = 0.3$ and 0.47 . The calculations have shown that a change of k within the limits of $1.12 - 1.35$, when the critical drop at the root of the guiding apparatus is maintained and other conditions being equal, has no practical effect on the flow kinematics. At ultrasonic drops the optimum swirling can give a $\sim 2\%$ gain of efficiency as compared with the method $c_{ur} = \text{const}$. For each individual stage there is its own method of swirling, securing the minimum output losses which, in particular for the considered cases ($c_m r^m = \text{const}$), is near to $\alpha_1 = \text{const}$.

A. Buzimovich

[Abstracter's note. Complete translation]

Card 2/2

33016
S/587/60/029/002/003/008
D262/D302

26.2120

AUTHORS: Shnee, Ya. I. and Garkusha, A. V.

TITLE: The effect of the vortex method on the magnitude of output losses

SOURCE: Khar'kov. Politekhnicheskii institut. Trudy. v. 29, no. 2, 1960. Parovyye i gazovyye turbiny, 89-101

TEXT: Nine variants as shown in Table 1 are calculated. (e = velocity indexes: 1 and 2 refer to nozzle exit and working blade exit respectively, and u and z to radial and axial directions respectively. The results are presented in form of graphs, showing changes

of the $\frac{C_2^2}{C_{11}^2}$ ratio (i = internal radius) and losses Δh_{e_2} along the

blade, and are analyzed. It is concluded that the losses calculated at the mean diameter represent with sufficient accuracy the losses for any of the above-mentioned variants. It is concluded

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The effect of the vortex ...

32016.
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D262/D302

that for every set of values of the parameters there is a separate vortex method which guarantees minimum losses. There are 6 figures and 2 tables.

М вариан- та	Метод выполнения направляющего аппарата	Метод выполнения рабочего аппарата
1	$\alpha_1 = \text{const}$	$C_{2u} = 0$
2	$C_{1u} r = \text{const}$	$C_{2u} = 0$
3	$\rho_1 C_{1z} = \text{const}$	$C_{2u} = 0$
4	$\alpha_1 = \text{const}$	$\rho_1 C_{1z} = \rho_2 C_{2z}$
5	$C_{1u} r = \text{const}$	$\rho_1 C_{1z} = \rho_2 C_{2z}$
6	$\rho_1 C_{1z} = \text{const}$	$\rho_1 C_{1z} = \rho_2 C_{2z}$
7	$\alpha_1 = \text{const}$	$\beta_2 = \text{const}$
8	$C_{1u} r = \text{const}$	$\beta_2 = \text{const}$
9	$\rho_1 C_{1z} = \text{const}$	$\beta_2 = \text{const}$

Table 1

1 - Variation number; 2 - method of execution of guiding apparatus;
3 - method of execution of working apparatus

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32017
S/587/60/029/002/004/008
D203/D302

26.2120
AUTHOR: Garkusha, A. V.

TITLE: On the problem of taking into account the losses in a turbine stage

SOURCE: Khar'kov. Politekhnikheskiy institut. Trudy. v. 29, no. 2, 1960. Parovyy i gazovyye turbiny, 103-109

TEXT: Taking into account nozzle losses, the flow in the clearance before the working blades is described by

$$\frac{d M_{1is}}{M_{1is}} = - \frac{\varphi^2}{K_T} \cdot \cos^2 \alpha_1 \frac{dr_B}{r_B} \quad (4)$$

where φ = velocity coefficient; α_1 = gas angle at outlet from nozzles; $K_T = \frac{\rho_{1is}}{\rho_1} = \frac{T_1}{T_{1is}}$ = temperature coefficient; $M_{1is} = \frac{C_{1is}}{a_0} =$

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32017

S/587/60/029/002/004/008
D203/D302

On the problem of taking ...

ratio of isentropic flow velocity to sonic velocity of stagnation;
 $\bar{r}_B = \frac{r}{r_B}$ = dimensionless radius. Suffixes "is" refer to isentropic

flow, B to blade root and z to axial direction. In solving Eq. (4) for the potential flow ($\rho_1 C_{1z} = \text{const}$), the complementary relation

$\frac{\tan \alpha_1}{r} = \text{const}$, corresponds to $C_{1n} r = \text{const}$ and $C_{1z} = \text{const}$. There-

fore, investigating a real stage, three possible flow cases are considered: a) Constant circulation; b) constant axial velocity and ✓

c) $\frac{\tan \alpha_1}{r} = \text{const}$. For these conditions the following formulae are derived:

$$a) \frac{M_{1is}}{M_{1isB}} = \left[1 - \frac{\varphi^2}{k_T} \cos^2 \alpha_{1B} \left(1 - \frac{1}{r_B^2} \right) \right]^{\frac{1}{2}} \quad (7)$$

Card 2/5